

What is claimed is:

1. Apparatus for inducing therapeutic hypothermia, comprising:
a source of breathing gas;
a heat exchanger configured to exchange heat with a flow of breathing gas from the source;
an ice particle generator configured to introduce fine ice particles into the flow of breathing gas;
and
a breathing interface configured to deliver the flow of breathing gas containing the fine ice particles to a patient.
2. The apparatus of claim 1, wherein the source of breathing gas comprises a mechanical ventilator.
3. The apparatus of claim 1, wherein the source of breathing gas comprises a mechanical ventilator configured to deliver ambient air to the apparatus.
4. The apparatus of claim 1, wherein the source of breathing gas comprises a supply of compressed breathing gas.
5. The apparatus of claim 4, wherein the compressed breathing gas comprises a mixture containing oxygen and helium.
6. The apparatus of claim 4, wherein the compressed breathing gas comprises a mixture containing oxygen and sulfur hexafluoride.

7. The apparatus of claim 1, wherein the ice particle generator includes a source of water and an atomizer for introducing fine droplets of water into the flow of breathing gas.
8. The apparatus of claim 1, wherein the ice particle generator includes a source of saline solution and an atomizer for introducing fine droplets of saline solution into the flow of breathing gas.
9. The apparatus of claim 7, wherein the atomizer is an ultrasonic atomizer.
10. The apparatus of claim 7, wherein the ice particle generator includes a chiller for cooling the water prior to atomization.
11. The apparatus of claim 1, wherein the heat exchanger is configured to selective cool or heat the flow of breathing gas from the source.
12. The apparatus of claim 1, further comprising a temperature sensor for measuring body temperature of the patient.
13. The apparatus of claim 11, further comprising a feedback controller for controlling operation of the apparatus based on the measured body temperature of the patient
14. A method for inducing therapeutic hypothermia in a patient, comprising:
introducing fine ice particles into a flow of breathing gas; and
delivering the flow of breathing gas containing the fine ice particles to the patient.

15. The method of claim 14, further comprising cooling the flow of breathing gas.
16. The method of claim 14, wherein the fine ice particles are introduced into the flow of breathing gas by cooling the flow of breathing gas to a temperature below freezing and introducing fine droplets of water into the flow of breathing gas.
17. The method of claim 14, wherein the fine ice particles are introduced into the flow of breathing gas by cooling the flow of breathing gas to a temperature below freezing and introducing fine droplets of saline solution into the flow of breathing gas.
18. The method of claim 14, further comprising measuring a body temperature of the patient and controlling a delivery rate of the fine ice particles to the patient based on the measured body temperature of the patient
19. The method of claim 14, wherein the breathing gas comprises a mixture containing oxygen and helium.
20. The method of claim 14, wherein the breathing gas comprises a mixture containing oxygen and sulfur hexafluoride.
21. The method of claim 14, further comprising administering an antishivering agent to the patient.
22. The method of claim 14, further comprising rewarming the patient by delivering a flow of heated breathing gas to the patient.